Course: 2DV604
Software Architecture
Assignment 1

Student: Waeel H Alhrazy
Date: 05/02/2019

Gymnastic League Software Managment

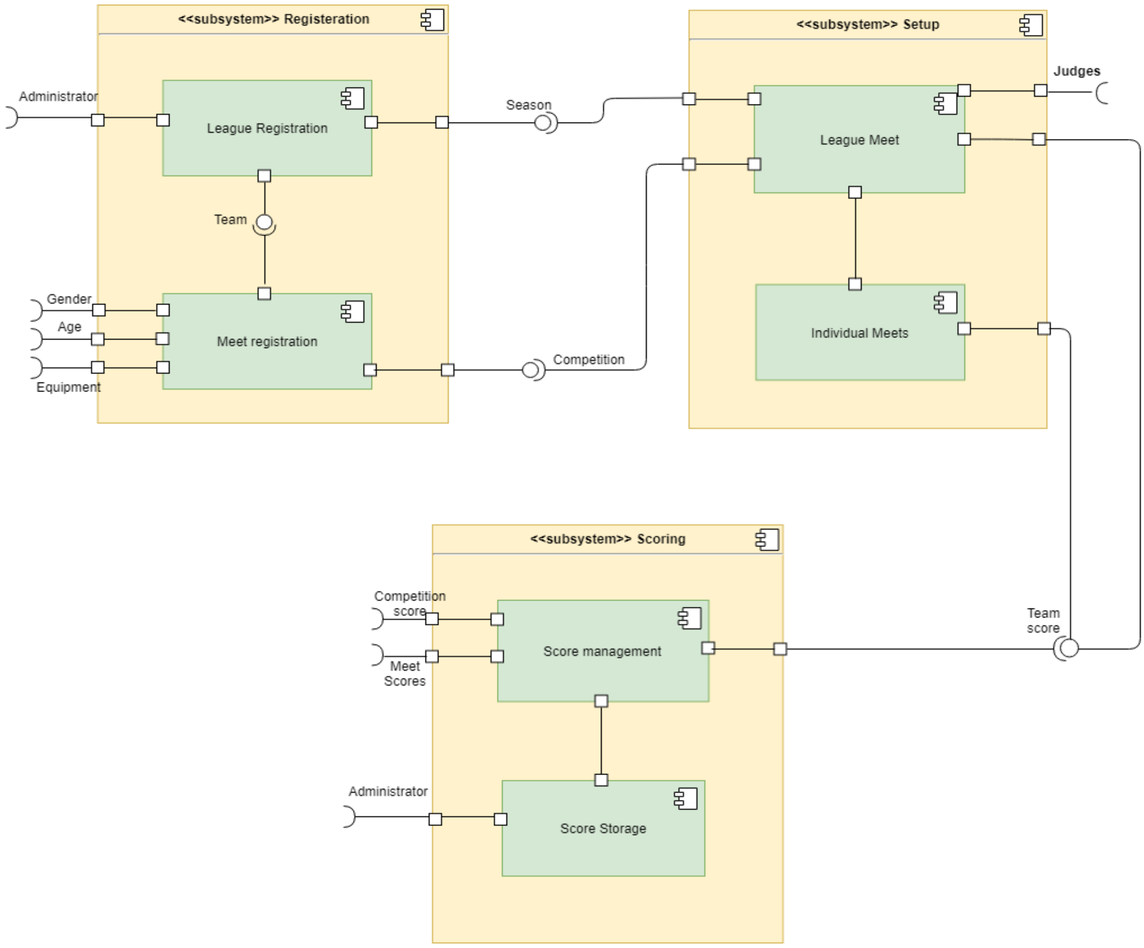
Overview:

Gymnastic league management system is developed to manage a contest among teams compete against each other in different activities. The tasks of this system are to assist with setup, registering, scoring and record keeping of a gymnastic season. The system should deal with the distribution of the teams with equal members and genders, chose a judging panel and assign them to different events, manage the events and meets.

Subsystems: (1st level decomposition)

Gymnastic league management system design is comprised of the following subsystems, according to my assumption after reading the system description requirement. I have divided the subsystems to three subsystems and will describe them with their interfaces as follow:

Component diagram for Gymnastic League



The diagram above presents how the subsystems interact with each other through interfaces, and below I will explain the functionality of every subsystem and its modules.

1- Registration subsystem

Manage all registrations of teams, gymnasts and judges, In Registration subsystem the administrator is registering team members and managing the meet registration, this subsystem has two modules:

a- League Registration: manage registration of the team's members. Modules interfaces.

- *Team*: provide team member data that are registered in the system to the meet registration module.
- *Season*: provide the new season information.
- *Administrators:* mange the registration and score-keeping.

b- Meet Registration: prepare the meet registration for the League Meet by allocating information of events. Its interfaces are:

- *Gender*: register Man/Women member for all-round or individual contests.
- *Age:* register junior and senior members for such contests.
- *Equipment:* register the equipment's that in the events
- *Competition:* provide all the meet information for the events to League Tournament in Setup subsystem.

2- Setup Subsystem

This subsystem is responsible of allocating the information from Registration subsystem and manage all the meets between teams, team's members, all-round, individual and senior and junior contests. Its Modules are:

a- League Meet: require *Season Records*, *Competitions* (events information) and *Judges* to manage the contests schedule for the season and assign a judge for each event. It has one interface:

- *Team Score:* provide the sum of gymnast's score to the Scoring Subsystem after the judges rate them.
- *Judges:* assign Judges for events.

b- Individual Meets: manage the individual contests and its schedule, send the event scores to Scoring subsystem.

3- Scoring Subsystem

This subsystem responsibilities are to manage the scores of gymnast's leagues and provide them to the Score-Keeper/Administrator for the end of the season. Has two modules:

a- Scoring Management: require *Team Scores* to manage the events scores and calculate the scores for the season competitions and assign them for teams. Interfaces:

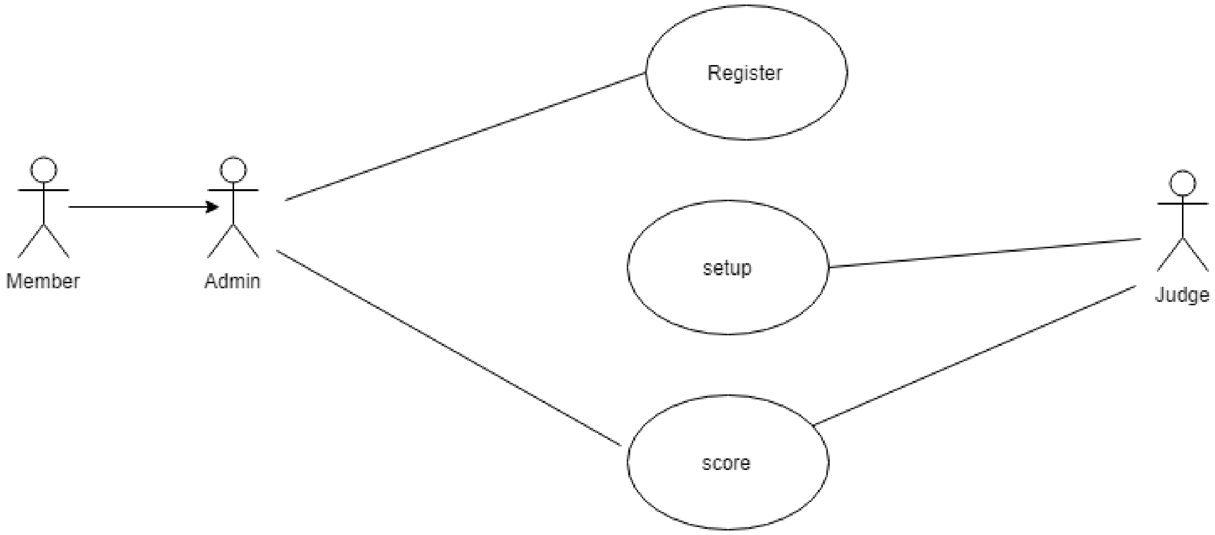
- *Competition Scores*: calculate the sum of scores for each event.
- *Meet Scores*: calculate the sum of the competition scores.

b- Storage: Store all the scores in order to provide it for the Score-keeper/Administrator. It has one interface:

- *Administrator:* check the season record for the gymnastics league

Use case Diagram:

The diagram to view the external user interaction with the system as an assumption.



Actors of the system

Member: is a team member

Admin: is the administrator who register the members and events

Judge: is the assigned judge to run the event and scores

Use cases:

Register: manage the registration of teams and events

Setup: manage the setup of competitions

Score: manage the scores of teams in events

Use cases Scenario: a very assumptive short scenario for the external users interacts with the system. A team *Member* asks to register in the competitions by *Admin* the admin then register members information and which events suits him/her according to gender and age. *Setup* use case collect the data from registration and make events, judges are assigned for events. *Judges* record the score and send it to the Score-keeper which is any Admin chosen.

When the judge records the score its saved in *Score* use case and Admin can view the scores and keep track of the scores of every team.

Motivation of System decomposition

From my understanding of the Gymnastic League Management system functional responsibilities I have made this assumption of the system decomposition. The decision I made in dividing these components was to maintain a one-man job where is no team project, so it's a rationale model. The administrator would be able to register team's members names and the events as well.

The registration subsystem has two module Team Register so administrator access names then provide this information to the Meets Registration there It take the information of each member and decide what events is suitable accordingly. Now, the system knows which events are being held for the season and decides who judge it and that is done by Setup subsystem.

Setup has two modules that take care of the meets, the individual meets is separated to maintain more and fast efficient system by dividing the task, where the Individual Meets module has same conditions and process as League Meets but for individuals' event. After all the meets are done and judges report the team results through the system, scoring record will be based to Scoring subsystem to manage and calculate all the scores to find a winner team in the season, so the module I made here is to require the team score, calculate it then save in Storage module to view the administrator or Score-Keeper the score record it.

This model design gives more dependency for each subsystem I think and divide tasks equally which make the system performs faster and prevent functions overlapping. I depend on high coherence and low-coupling in this system model.

Course: 2DV604 Student: Waeel H Alhrazy
Software Architecture Date: 05/02/2019
Assignment 1

Concerns:

Gymnastic League management system has some concerns which rose during my decomposing of the system and those concerns are only what appear to me in the meantime, as I believe there will be more when I complete the whole system design.

1- The system main concern is to develop a better authentication system and divide responsibilities, it should have an admin that has full access to the system, to make sure there is no user could play with the result record or change a team score. There should be an effective authentication system, where users can use the system without accessing unpermitted sections of the system. The system has different users: ***Administrators***: who has full access authority to use the system.
Judges*:* Judge and event and report the scores after events.
Team members*:* member of the gymnastic can view their profile and their team record of the season. This rise a concern in the system to develop a user management. Furthermore, the system will store personal data of users so the privacy should be high and maintained to secure such sensitive data. The system should provide error notifications in case the users failed to log in etc.

2- One concern is to deal with the actors in the system, the system should be able to deal with any changes with system users during the meet. For example, judge enters wrong score or would like to edit the sore of a team. The speed of the system responses is important and how the system deal with errors is quality concern too as the application should deal with scores during a season and this kind of concerns would affect the competitions due too short time of the season which is one day. Therefore, the system should be fast and reliable. Performance testing is important to check the how fast the subsystems react and to see if the performance is up to standard.

3- "The system should rely on state-of-the-art technologies for its different end-user interfaces and back-end support functions", in this requirement there is some risks as this technology is a bit expensive technology and has some complexity, where the users should be trained to use such technology. The setting up of such tech needs some experts and that cost of maintenance as well. It will give better performance for the Gymnastic League Management System but in the other hand its costy.

4- System usability is another concern, as the admin should be trained how to use the system as whole, judge how to access the score and members how to surf through their profile and account setting. Therefore, the system should be user friendly. I should consider also the developed technology that the stakeholder required to use, thus the users should also be trained to use this technology and provide training sessions if there are any updates or change on those technologies.

5- The system should develop a process for the presentations in the league poral, publishes seasonal standings and advertisement for teams and gymnasts. Therefore, the system should be modifiable and flexible to handle all these requirements as they get outdated and changed from time to time. Most important concern is availability of the system and its connected technologies; the system rely on real-time scoring data and that is when the team score is entered and viewed on monitors so the system should be available due time.